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August 2, 2007

Mr. Steve Rosenbaum, Senior Engineering Geologist
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

SUBJECT: Comments on Tentative WDRs for Kirkwood Meadows Public Utility District

Dear Mr. Rosenbaum:

On behalf of the Kirkwood Meadows Public Utility District (KMPUD), ECO:LOGIC Engineering provides the following comments and recommendations regarding the Tentative Waste Discharge Requirements dated 2 July 2007. Overall, we find the Tentative WDRs well written as to what is being asked of the District, and why. We also find the tentative requirements to be reasonable, in general, within the context of our understanding of the governing regulations and policies. Our following comments and recommendations are of two types:

- Type A comments are corrections of what we believe are oversights in the Tentative WDRs. These comments should not be controversial, and are provided as Attachment A to this letter.
- Type B comments are KMPUD's recommended changes to the Tentative WDRs based on factual information and our understanding of science, the Basin Plan, and related policies. Type B comments are the subject of this letter.

Effluent Salinity. Finding 39 states "A TDS effluent limitation of 425 mg/L represents no cost or change in practice for the Discharger." The Effluent Limitations (page 16) set a monthly average TDS limit of 425 mg/L. The average annual TDS concentration for KMPUD effluent for the past 5 years is as follows:

Effluent Constituent	Calendar Year				
	2006	2005	2004	2003	2002
Average Annual TDS, mg/L	492	470	381	497	373

KMPUD will not be able to comply with a monthly average or annual average effluent limitation of 425 mg/L without great expense. KMPUD recommends that the effluent TDS issue be resolved via a BPTC analysis that will consider 1) KMPUD's water conservation program, 2) the results of the upcoming groundwater monitoring program, 3) the salt addition resulting from the CIP maintenance needed with MBR treatment, and 4) determination of how much TDS being measured is actually salt. The best indicator of effluent salinity is the TDFS (total dissolved fixed solids) test, not the TDS or EC test, which are both subject to error in wastewater applications.

KMPUD recognizes the State's programs to control salinity in water resources. In support of these programs, KMPUD suggests an interim average annual effluent limitation on TDS of 500 mg/L, which holds KMPUD to its current salinity performance while the BPTC issue is resolved so that final TDS effluent limitations can be established based on much more complete and accurate data than are available at this time.

Effluent Nitrogen. As shown in Figure 2 of the KMPUD Report of Waste Discharge, the MBR was designed to remove total nitrogen down to 15 mg/L in May through October, and 25 mg/L in November through April. The design engineer states the MBR will not reliably meet 10 mg/L (May - October) and 20 mg/L (November - April) effluent limitations, as specified on page 16 of the Tentative WDRs, under design flow and load conditions. KMPUD does not comply with these proposed requirements under current flow and load conditions:

	Calendar Year 2006											
	J	F	M	A	M	J	J	A	S	O	N	D
Total nitrogen, mg/L	13.5	15.3	15.7	19.8	8.9	17.0	18.0	11.3	13.4	15.5	13.4	10.5
Proposed limit, mg/L	20	20	20	20	10	10	10	10	10	10	20	20

If fact, KMPUD is having difficulty operating the MBR to achieve the 15 mg/L design objective during the summer months as shown above. KMPUD is working with the operations staff and design engineer to determine what can be done to improve process nitrification/denitrification with the variable wastewater flows, strengths, and temperatures that the KMPUD MBR faces. As an example of the extreme conditions faced, in May the influent BOD was only 30 mg/L because of snowmelt I/I. Denitrification was virtually inoperable because of the lack of readily degradable organics in such dilute wastewater. The May effluent total N concentration of 8.9 mg/L represents no removal of nitrogen by the MBR; this is simply how dilute the wastewater nitrogen concentration was in May under snowmelt conditions.

In summary, the KMPUD MBR cannot comply with the proposed total nitrogen effluent limitations at this time. KMPUD, recognizing the possibility of groundwater degradation or pollution, is currently studying how to optimize MBR nitrogen removal under the actual range of wastewater conditions being encountered. The extent of additional nitrogen treatment being provided by the

meadow soils at the disposal leachfields is unknown, but is potentially substantial, and will be determined by the groundwater monitoring program.

Based on the foregoing, KMPUD recommends that the final total nitrogen effluent limitations be determined based on the results of the upcoming groundwater monitoring program and the on-going BPTC study by KMPUD of how to optimize the nitrogen removal potential of this MBR under field conditions. An interim average annual total nitrogen concentration of 16 mg/L would hold KMPUD to its current nitrogen removal performance (2006 total Nitrogen averaged 14.4 mg/L, 2005 total Nitrogen averaged 16.0 mg/L) while the issues of degradation, pollution, and BPTC for this treatment process and specific wastewater are resolved.

Nitrogen BPTC Report and Workplan, page 18: With a submittal date of 31 December 2008, the Nitrogen BPTC Report and Workplan will not have the benefit of 8 quarters of groundwater quality monitoring needed for the Background Groundwater Quality Study Report (p. 19) which will be the basis for determining whether current effluent nitrogen concentrations are causing degradation or pollution of groundwater using Title 27 statistics.

Without the background data, the nitrogen BPTC evaluation will need to be limited to process modifications and their capital and annual costs to reduce seasonal effluent nitrogen concentrations to various levels. This work is on-going. However, determining what effluent limit is needed to prevent pollution or degradation and whether that limit is practicable will not be known until the "Background" report is completed by 31 December 2009. In other words, a complete nitrogen BPTC analysis and implementation workplan cannot be completed until sometime after 31 December 2009.

After the workplan is approved by the Executive Officer (EO), KMPUD will need to complete a project description for CEQA, complete CEQA, modify the project to reflect any necessary mitigation measures arising from the CEQA analysis, design the improvements to develop a detailed capital and annual cost estimate, hold hearings to raise user fees to cover these new expenses, complete financing based on the fee increase, bid the project, and construct the project. When we outline all of the steps necessary to implement a potentially major change to our MBR process, we realize it cannot be done in two years from EO approval of the implementation plan.

KMPUD recommends that the Nitrogen BPTC Report and Workplan be submitted four months following the 31 December 2009 Background Groundwater Quality Study Report. These four months give KMPUD and the Regional Water Board time to discuss the "Background" report results and Title 27 statistical analyses that will be presented therein, with the results of those discussions being critical to the "Nitrogen BPTC" report's evaluation of what effluent nitrogen limitations appear to be necessary to prevent degradation, and to prevent pollution, and the costs and practicability to implement those limitations. In other words, we should all agree on the "Background" report results before finalizing the "Nitrogen BPTC" report.

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The design, CEQA, financing, and construction of BPTC modifications to the current nitrification/denitrification MBR process, which is itself state-of-the-art, should take 3 years past the EO's approval of the workplan if no major problems are encountered. Therefore, KMPUD is requesting that the BPTC implementation schedule be increased to at least 3 years past the EO's approval of the workplan.

That concludes KMPUD's comments and recommendations regarding the Tentative WDRs. Please feel free to contact either me (916-773-8100) or Michael Sharp (KMPUD, 209-258-4444 Ext. 2) to discuss these matters further.

Sincerely,

ECO:LOGIC ENGINEERING



Rich Stowell

Attachments:

cc: Tom Henie, General Manager, KMPUD
Scott Kranhold, Regional Water Board

KIRK05-001

ECO:LOGIC

Type A Comments to the KMPUD Tentative WDRs

- Globally change “Kirkwood Public Utility District” to “Kirkwood Meadows Public Utility District” and “KPUD” to “KMPUD”.
- The KMPUD office, all treatment facilities, and most of the leachfields are in Alpine County, not Amador County. It appears that changing globally “Amador County” to “Alpine County” in the tentative permit is appropriate.
- Finding 1: KMPUD has completed the upgrades; thus, we believe it would be more accurate to change “proposes to upgrade” to “has upgraded”.
- Finding 5: “Kirkwood ski” should be changed to “Kirkwood Ski Resort”.
- Finding 7: Wastewater is delivered to the treatment system by two influent pump stations. The East Lift station has two 230 gpm pumps that can be upsized to 400 gpm. The Main Lift Station has two 90 gpm pumps.
- Finding 10: “Aluminum” should be changed to “Alum”, i.e., the coagulant aluminum sulfate.
- Finding 13: “precede a” should be changed to “proceed at”.
- Finding 19: The units for iron should be “µg/L” not “mg/L”. Additionally, a NO₃ concentration of 0.54 mg/L cannot have a NO₃ as N concentration of <0.05. Nitrogen “N” (molecular wt = 14) is 23% of the weight of NO₃ (molecular wt = 14 + 3 x 16 = 62); therefore, a NO₃ concentration of 0.54 mg/L should have a NO₃ as N concentration of 0.12 mg/L, not <0.05 mg/L.
- Finding 34: With the manganese concentrations being around 1 mg/L and the WQO being 0.050 mg/L, there is evidence of water quality problems in this groundwater resource. With this being a meadow setting, the possibility of low redox zones in the aquifer is not surprising, and is one reason for the rather complex and extensive KMPUD proposal for groundwater quality monitoring. It would be very easy to ascribe blame for a 3.3 mg/L manganese reading to KMPUD effluent disposal practices when in fact such varying and poor water quality conditions already exist at locations in the meadow aquifer. In this regard, the closing sentence of Finding 34 should have “is of very good quality” changed to “appears to be of good quality, in general”. We will know more about the quality of meadow aquifer water after the new monitoring wells are installed this autumn.
- Finding 44: Change “Aluminum” to “Alum”.
- Information Sheet, page 3: In the first complete paragraph, change “establishes interim receiving water limitations” to “establishes interim groundwater limitations”.
- Information Sheet, page 4: Add the reference numbers to the footnotes.
- Information Sheet, page 6: At the very bottom, change “274.000” to “274,000”.